

The Importance of Contexting in Structuring Web Sites for Effective Usability

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Imagine receiving your local newspaper in one huge section. The front page is used to index each article's location in the paper. To read an article, you must either (a), locate its page and column numbers from the front page or (b), browse through each page and column of the paper to locate it.

I think we would all agree that neither navigation method makes for easy reading. Although the newspaper contains valuable information, in this format it would fail to be an effective communication vehicle. Eventually, we would cancel our subscription and get our news elsewhere. Fortunately, however, newspapers have found that by grouping articles into theme sections, and providing tables of contents when necessary, they can be effective communication vehicles.

In fact, many of the information structure metaphors that we use to design our web sites have evolved from newspapers and other types of publications. We use link pages, which have evolved from tables of contents. Newspaper sections have become topical categories for grouping information, indexes have evolved into site maps, and cross-indexing has been incorporated by hyperlinking. We use these components of information architecture

web development

web architecture

when we structure web sites.

However, web site architecture is more than just using structural components. The core purpose of web site architecture is to make information accessible, to create meaning, and to communicate. A web site is much like an office building; a well-designed structure facilitates users ability to move through the company's "virtual departments": human resources, product development, marketing, company library, etc., and the building accommodates the company as it grows.

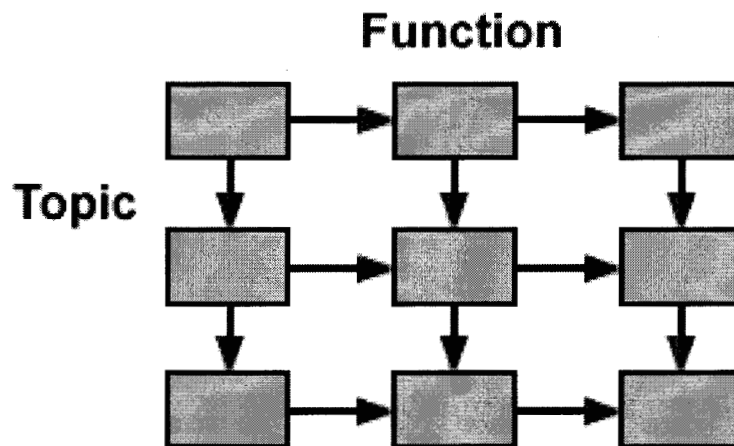
An office building, however, has a distinct advantage over a web site when it comes to communication. People in an office building are constantly and simultaneously communicating. Information contexting begins by extracting meaning from the office's physical surroundings, both before and after entering the office door. Before walking into the office, a person has some knowledge of the company. An employee quickly becomes "programmed": He or she speaks the company lingo, understands the company's culture, goals and priorities, and has developed a communication network comprising friends, co-workers, bosses, and business contacts. When members of the network share information about a situation with other employees, their perspective is based on their own knowledge and role in the situation, other employees' knowledge and role in the situation, and their relationship with the employee. Employees will add to the meaning of the sender's message based on their own previous experiences, future

expectations, and other situations happening at the moment.

The amount of contexting used can be defined along a continuum; co-workers extract meaning with greater depth and breadth of contexting than office visitors can. Visitors can still extract some meaning from the office's environment, but not to the extent that an employee can. Since several factors influence contexting, people inherently rely on more than one factor of contexting to facilitate communication.

Consequently, emulating this highly effective and economical communication process of transmitting and receiving meaning in a "virtual office" (web site), becomes a challenge for web designers. Web designers know that two users may access one piece of information differently. As a result, web site designers face three constant challenge: First, they must determine how users will access each topic of information. Second, they must structure web sites so all users will find each topic in the shortest possible time or by using the fewest mouse clicks. And third, they must decrease information overload by reducing the number of topical elements, colors, graphics, etc. users will be analyzing, while showing information relationships that assist users in extracting meaning. Web sites must include effective interfaces, incorporating navigation elements such as tables of content, colors, and cross-linking for users to intuitively find information.

But effective interfacing, alone, is insufficient to fully enable web site contexting. Web sites must also be *structured* to promote contexting. Web sites structured to promote contexting enable most users -- regardless of how knowledgeable they are with the content -- to intuitively navigate and access the information they want on a site. Structuring web sites is accomplished mainly by incorporating classic navigation structures: hierarchical, sequential, direct and matrix (grid) See Morris and Hinrich, *Web Page Design: A Different Multimedia* (Prentiss Hall, 1996). Many web site architectures incorporate only one or two of these navigation structures. However, after conducting usability testing, I have found that users can locate information, no matter how familiar they are with the web site, when the site incorporates all of these navigation structures.

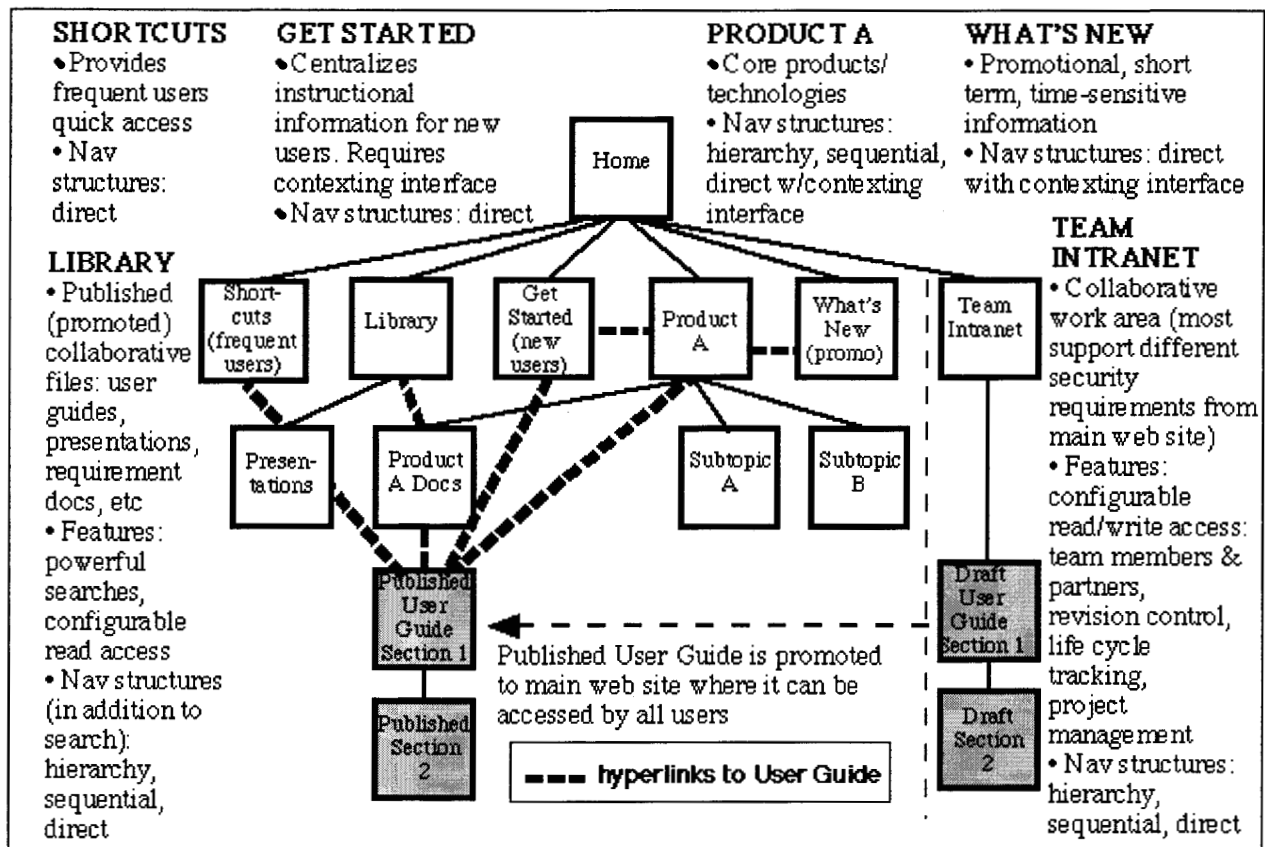


Matrix (grid) navigation structure

Before meaning can be attached to information, web designers must define the objective of the web site by taking into

consideration the audience (the users) and the audience's needs. The objective of the web site may change based upon the type of information that needs to be communicated. Different types and forms of information may require different communication methods so users can easily and quickly access the information they need when and at what level of detail they need it.

For example, your company's software and documentation departments are developing a user guide for a product. The team develops the user guide using a collaborative intranet, which provides revision control, project management, and workflow for this work in progress. However, after the user guide is completed the information within this document and the audience's need for it changes. The user guide is promoted from the collaborative development environment to the electronic library. The library provides powerful and effective navigation functions needed by the library users, but the library does not provide the workflow and revision control needed by the development team. In addition, to promote the new user guide, for a limited time the company adds an advertisement to the web site's "What's New" section. In fact, the company is promoting the product, which is of primary interest and not the user guide, which takes on a supporting role here. All users view the "What's New" section, which gives them an overview of detailed information located elsewhere. A brief video or text advertisement about the new version of the product for which the user guide was created may pique the curious to access the product and the user guide together.



A web site structured to enable contexting.

So, web designers must understand that the communication process of one piece of information will vary depending on the information being emphasized, the audience's need for this information, the type of information being communicated, and the ways in which this information is being communicated. All of these factors must be taken into consideration when the web designer defines the objectives of the web site and begins to context information on the web site.

How do we context information on a web site? First, we "chunk" information by breaking it into small topics or subtopics.

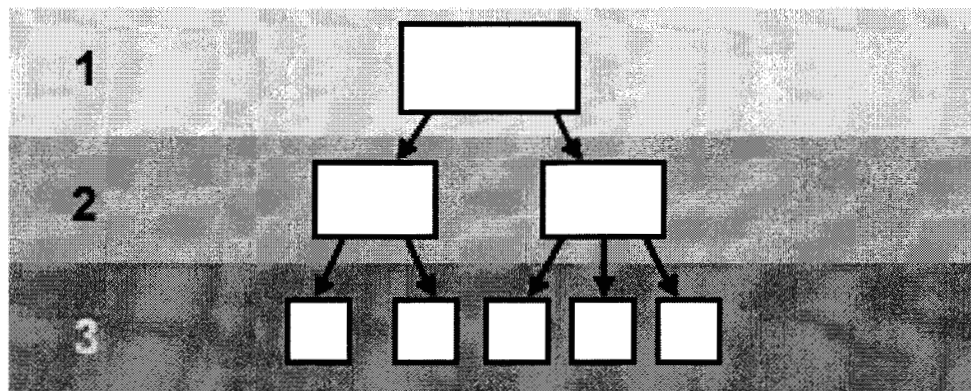
We have all clicked on a hyperlink, linking to a topic on a large linear multi-topic file. The linked topic is in context, but if you scroll through the linear file, instead of hitting the browser's back button, you can easily become distracted or disoriented, reading the other topics out of context. Chunking information, by creating one topic or subtopic per file, facilitates information contexting, accessing, reusing, and assimilating.

Contexting is about establishing relationships. In a web site, users expect to intuitively recognize relationships between what they were looking for, what they were expecting to find, and what they actually found as they navigate the structure. Relationships that don't make sense or are missing frustrate the user and decrease the web site's effectiveness. These relationships are in part established through navigation structures. The focus of this paper, however, will be on using hierarchical, sequential and direct navigation to effectively structure web sites to encourage contexting.

Using navigation structures to context information when building a web site helps users to locate topics of interest. In usability testing I have found that users are less likely to get lost and will more often complete tasks (access information) when the web site's architecture incorporates hierarchical, sequential, and direct navigation structures. These navigation structures are effective building blocks that show relationships among pieces of

information.

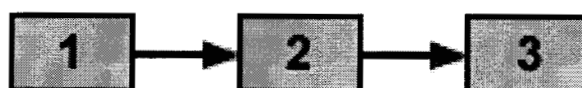
Hierarchical navigation (HN) structure is an intuitive way to show relationships. This directory/subdirectory structure, used by all computer operating systems, shows parent, child, and sibling relationships and adds depth to a web site, allowing users to drill from broad, general areas to narrow, specific topics.



Hierarchical navigation (HN) structure

I consider HN the web site "lead" structure because HN can support most information on a web site. Many web sites are designed using solely this structure. Top level main categories are often the top level of a HN structure. This tree structure enables web designers to control the amount of information they want users to handle at a time, minimizing cognitive overload. In addition, this structure coherently shows relationships among the nested topics within its branches, enabling the web designer to incorporate, through strategic cross-linking, all topics within a subject. A well-designed HN structure facilitates users in contexting and accessing information.

Although HN is a great lead structure, incorporating “supporting” navigation structures enables beginner and expert users, whose navigation needs differ from moderate users, to access information easily and quickly. Like the name suggests, supporting navigation structures aren’t comprehensive enough to use alone. Nonetheless, sequential navigation (SN) and direct navigation (DN) structures augment hierarchical navigation, supplying capabilities that HN structure doesn’t provide. Supporting navigation structures are best for communicating ordered information and information that requires augmented contexting.



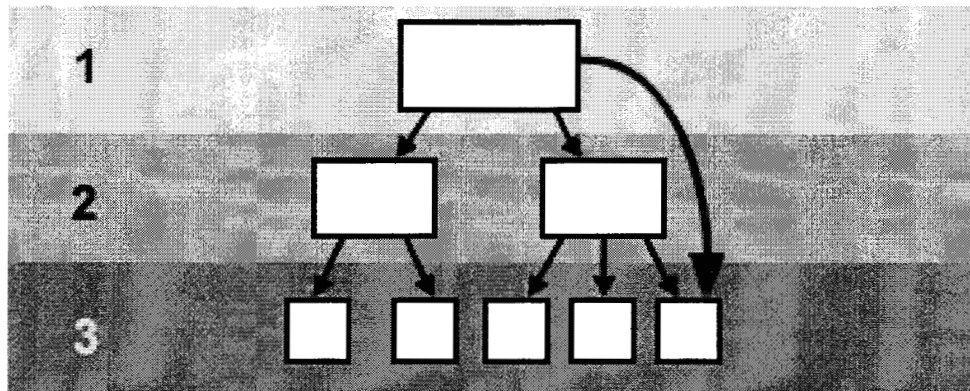
Sequential navigation (SN) structure

Sequential navigation structure shows timeliness and priority. SN structure forces users to access information in a specific order while maintaining integrity of the author’s intent and the meaning of the information as a whole. This structure is effective for beginners needing step-by-step instructions, for showing presentation slide order, and for threading together one topic split into a set of files, each containing a subtopic.

Direct navigation provides the most efficient way to cut through hierarchical levels and is the fastest route to frequently

accessed information, making it both popular and requested by expert users. However, using DN often means that meaning is incomplete or even lost because users access information out of context, making DN's strength also its weakness. DN allows users to access a topic by drilling down through levels of a web site, bypassing topics that show relationships with and attach meaning to the targeted topic. Users unfamiliar with the topic may have to backtrack and read other information in the hierarchical structure to gain complete understanding of the topic they accessed. In addition, too much DN can create information overload. DN abuse can hamper and frustrate both beginner and infrequent users unfamiliar with a web site.

One way to use DN is to include interfaces to enable contexting and to minimize information overload. A "Getting Started" page is an example of an incorporated contexting interface, providing and centralizing in-text information and links to all topics and data objects users need to get started with a product. This contexting interface facilitates users in accessing and assimilating all applicable information.



Direct navigation (DN)

By nature, web sites are dynamic communication vehicles and people have specific goals in mind when entering them. The communication that occurs within a web site and among users varies almost incessantly. The contents of any web site can change at any time and the information needs of users may change each time they enter the site. Today, users may access information on a web site from areas in which they are quite familiar. Tomorrow, the same users may access information from areas on the same web site that they have never explored. Although users very familiar with a web site's content require less contexting to access and assimilate information than users less familiar, most users vary in their degrees of familiarity with all information under any web site. I believe web sites should provide the ability for all users to access and understand information through contexting. Regardless of which cognitive processes a user instinctively incorporates, building web sites using hierarchical, sequential, and direct navigation structures will help all users to access and to extract full meaning from any piece of information.

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